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EXAMINER

KLIMOWICZ, WILLIAM JOSEPH

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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2652

DATE MAILED: 12/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/990,490

Applicant(s)

MATONO, NAOTO

Examiner

William J. Klimowicz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 9-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

Election/Restriction

Applicant's election (without traverse) of Group I (claims 1-8) and Species I (Figures 1-14), corresponding, according to Applicant, to claims 1-8, wherein Applicant alleges that claim 1 is generic, in Paper No. 7, filed October 21, 2003, is acknowledged.

Claims 9-18 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Election was made **without** traverse in Paper No. 7.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2 and 4-6 are rejected under 35 U.S.C. 102(e) as being anticipated by Hu et al. (US 6,156,375).

As per claim 1, Hu et al. (US 6,156,375) discloses a discloses a thin film magnetic head (e.g., FIG. 10) including: two magnetic layers (e.g., P1, P2) magnetically coupled to each other (at a back gap region) and having two magnetic poles (P1, P2) which face each other with a gap layer (write gap) in between and face a recording medium (e.g., see, *inter alia*, COL. 1, lines 25-

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30), a thin film coil (e.g., C) provided between the two magnetic layers (P1, P2), and an insulating layer (e.g., I1, I2, I3) for insulating the thin film coil from the two magnetic layers (P1, P2), including: a magnetic transducer film (MR); a first magnetic film (e.g., S2) provided between the magnetic transducer film (S2) and the two magnetic layers (P1, P2); and a second magnetic film (e.g., S1) provided opposite to the first magnetic film (S2) with the magnetic transducer film (MR) in between, wherein the first magnetic film (S2) extends to a first position (e.g., farthest position of (S2) from vertical left-side ABS, as seen in FIG. 10) from a recording-medium-facing surface facing the recording medium, the thin film coil (C) is provided in a region farther from the recording-medium-facing surface than a second position (e.g., position in which the "COIL REGION" commences) by using as a reference position the second position farther from the recording-medium-facing surface than the first position (see FIG. 10), and the second magnetic film (S1) extends from the recording-medium-facing surface to a third position (e.g., far right side position of (S1) as seen in FIG. 10) farther from the recording-medium-facing surface than the second position.

As per claim 2, wherein a length of the first magnetic film (S2) is equal to or less than 1/3 of a length of the insulating layer (I1, I2, I3) as readily depicted in FIG. 10.

As per claim 4, wherein an end surface (e.g., 90) of the first magnetic film (S2) far from the recording-medium-facing surface is inclined so that an exterior angle between the end surface and a first magnetic film extending direction is more than 90° (see FIG. 10).

As per claim 5, wherein the second magnetic film (S1) extends so that a surface of the second magnetic film (S1) close to the first magnetic film (S2) may be flat over the overall surface (e.g., the surface of (S1) adjacent or close to (S2) is flat over the surface "close to" (S2)),

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and the thin film coil (C) is provided so that a position of a surface of the thin film coil (e.g., the vertical surface of the innermost coil winding - i.e., farthest winding to the right side as seen in FIG. 10) close to the second magnetic film (S1) may be closer to the second magnetic film (S1) than a position of a surface of a portion of the gap layer (WRITE GAP) near the recording-medium-facing surface, the surface being far from the second magnetic film (S1) - near the back gap region.

As per claim 6, a connect wiring (e.g., 96, C1, C2) is provided connected to the magnetic transducer film (MR) and the another end connected to an external circuit (e.g. at (134, 136), wherein the first magnetic film (S2) extends so as to coat a region in which the connect wiring (96) is provided - FIG. 10.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hu et al. (US 6,156,375).

See the discussion of Hu et al. (US 6,156,375), *supra*.

As per claim 3, although Hu et al. (US 6,156,375) remains silent with respect to wherein the length of the first magnetic film is equal to or less than 10 μm , it is notoriously old and well

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known in the magnetic head art to routinely modify a magnetic head structure in the course of routine optimization/ experimentation and thereby obtain various standard optimized relationships including those set forth in claim 3.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have had the magnetic head first magnetic film length of Hu et al. (US 6,156,375) be equal or less than 10 μm as set forth in claim 3.

The rationale is as follows: one of ordinary skill in the art would have been motivated to have had the magnetic head first magnetic film (S2) length of Hu et al. (US 6,156,375) be equal or less than 10 μm as set forth in claim 3, in order to reduce the insulation stack reluctance of the write coil by eliminating, or in the case of the embodiment depicted in FIG. 10 of Hu et al. (US 6,156,375), thinning the magnetic shield pole (e.g., see, *inter alia*, COL. 2, lines 45-62 of Hu et al. (US 6,156,375)) to a desired value, by reducing the thinness of the shield in the manner taught and suggested by Hu et al. (US 6,156,375). Thus given the teaching of Hu et al. (US 6,156,375) to reduce the reluctance of the insulation stack write coil by minimizing the length of the shield (S2), it would have been obvious to one of ordinary skill in the art to routinely modify the magnetic head structure shield length (S2) of Hu et al. (US 6,156,375), as suggested by Hu et al. (US 6,156,375), in the course of routine optimization /experimentation and thereby obtain various standard optimized relationships including those set forth in claim 3.

Moreover, absent a showing of criticality (i.e., unobvious or unexpected results), the relationships set forth in claim 3, given the teachings of Hu et al. (US 6,156,375), are considered to be within the level of ordinary skill in the art.

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Additionally, the law is replete with cases in which when the mere difference between the claimed invention and the prior art is some range, variable or other dimensional limitation within the claims, patentability cannot be found.

It furthermore has been held in such a situation, the Applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range. *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Moreover, the instant disclosure does not set forth evidence ascribing unexpected results due to the claimed dimensions. See *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338 (Fed. Cir. 1984), which held that the dimensional limitations failed to point out a feature which performed and operated any differently from the prior art.

Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hu et al. (US 6,156,375) in view of Nakamoto et al. (US 6,275,360 B1).

See the discussion of Hu et al. (US 6,156,375), *supra*.

As per claims 7 and 8, Hu et al. (US 6,156,375) does not expressly show wherein one of the two magnetic layers (P1, P2) close to the first magnetic film (S2) is made of a different material from a material of the first magnetic film, such that the one magnetic layer (P1 or P2) is made of a material having a higher saturation magnetic flux density than a saturation magnetic flux density of the material of the first magnetic film (S2).

As per claim 7, however, Nakamoto et al. (US 6,275,360 B1) teaches providing a thin film inductive write, magnetoresistive read transducer of the type disclosed by Hu et al. (US 6,156,375) wherein a write pole magnetic layer (52) close to a first magnetic film (53) is made of

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a different material from a material of the first magnetic film (53), wherein as per claim 8, the one magnetic layer (52) is made of a material having a higher saturation magnetic flux density than a saturation magnetic flux density of the material of the first magnetic film (53).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the head of Hu et al. (US 6,156,375) with one of the two magnetic layers (P1, P2) close to the first magnetic film (S2), as being made of a different material from a material of the first magnetic film, such that the one magnetic layer (P1 o P2) is made of a material having a higher saturation magnetic flux density than a saturation magnetic flux density of the material of the first magnetic film (S2), as analogously taught and suggested by Nakamoto et al. (US 6,275,360 B1).

The rationale is as follows: one of ordinary skill in the art would have been motivated to provide the head of Hu et al. (US 6,156,375) with one of the two magnetic layers (P1, P2) close to the first magnetic film (S2), as being made of a different material from a material of the first magnetic film, such that the one magnetic layer (P1 o P2) is made of a material having a higher saturation magnetic flux density than a saturation magnetic flux density of the material of the first magnetic film (S2), in order to suppress the fluctuation of a reproduced waveform and to suppress noise appearing in such waveform, as analogously taught and suggested by Nakamoto et al. (US 6,275,360 B1).

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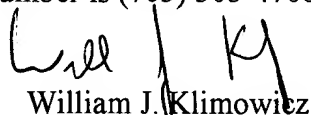
Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William J. Klimowicz whose telephone number is (703) 305-3452. The examiner can normally be reached on Monday-Thursday (6:30AM-5:00PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on (703) 305-9687. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.


William J. Klimowicz
Primary Examiner
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WJK